

**REMARKS**

This Amendment is submitted in response to the Decision on Appeal, dated September 22, 2006 and is accompanied by an RCE. Claims 1-12, 23 and 25 are presently pending in the above-identified patent application. Claim 7 is cancelled herein without  
 5 prejudice. Claims 1, 4, 6, 23, and 25 are proposed to be amended herein. No new matter has been introduced. Support for the amendment can be found, for example, on page 6, lines 24-27, page 7, lines 15-20, and page 12, line 23 through page 13, line 4, of the specification.

The Examiner is thanked for the courtesy of a telephone interview on November 13, 2006, initiated by the Appellants to discuss the patentability of claims 1, 23 and 25 in view  
 10 of Rigoutsos et al. (Rigoutsos et al., "Combinatorial Pattern Discovery in Biological Sequences: The TEIRESIAS Algorithm," *Bioinformatics*, Vol. 14, pp. 55-67 (1998)). Proposed amendments, consistent with the present amendments, were discussed and the Examiner indicated that the proposed amendments were believed to distinguish over Rigoutsos et al.

15 In the Decision on Appeal, the Board on Patent Appeals and Interferences (hereinafter "the Board") reversed the rejection based on 35 U.S.C. §101. The Board affirmed the rejections under 35 U.S.C. §§102(b) and 103 with respect to claims 1-3, 5, 8, 10 and 12. The Board reversed the rejections under 35 U.S.C. §§102(b) and 103 with respect to claims 6, 7 and 11. The Board also reversed the rejection under 35 U.S.C. §103 with respect  
 20 to claim 9 and the rejection under 35 U.S.C. §112, second paragraph, with respect to claim 7. The Board affirmed the rejection under 35 U.S.C. §112, second paragraph, with respect to claim 4 but designated that affirmance a new ground of rejection.

**Section 102(b) Rejections**

25 The Board affirmed the rejections under §102(b) with respect to claims 1-3, 5, 8, 10 and 12 as being allegedly anticipated by Benson. Applicants respectfully assert that the amendment to claims 1, 6, 23, and 25 overcomes the rejection. Support for the amendment can be found, for example, from page 12, line 23 through page 13, line 4, of the specification.

30 On page 17 of the Decision on Appeal, the Board asserted that

the method defined by claim 6 requires discovering a pattern common to the sequences in the data set, where the pattern includes both “don’t care” positions and positions having an expected symbol, then determining if a candidate sequence includes the pattern that is common to at least some of the sequences in the data set. Claim 7 includes the same limitations by virtue of its dependence on claim 6. The examiner has not adequately explained how these limitations are taught by Benson, alone or with the evidence provided by Altschul. We therefore reverse the rejection of claims 6 and 7.

The amendments to independent claims 1, 23 and 25 incorporate the subject matter of the claim 7 limitation, and therefore overcome the rejection because Benson does not teach or suggest discovering a plurality of patterns common to a plurality of the sequences, wherein each pattern comprises a plurality of positions, at least one of the positions comprise an expected symbol and at least one of the positions comprise one symbol of a specified plurality of symbols, wherein the specified plurality of symbols consists of at least two symbols and no more than  $|\Sigma| - 1$  symbols, wherein  $|\Sigma|$  is a number of available symbols in a set.

#### Section 103 Rejections

The Board affirmed the rejections under §103 with respect to claims 1-3, 5, 8, 10 and 12 as being allegedly obvious in view of Benson and Kleffe. Applicants respectfully assert that the amendment to claims 1, 6, 23, and 25 overcomes the rejection. Support for the amendment can be found, for example, from page 12, line 23 through page 13, line 4, of the specification. On page 19 of the Decision on Appeal, the Board asserted that

we reversed the rejection of claims 6, 7 and 11 as anticipated by Benson. The examiner has pointed to nothing in Kleffe that would remedy the deficiencies of Benson with respect to these claims and Appellants argue that “Kleffe does not provide any of the limitations for which Benson is lacking.” Appeal Brief, page 10. We agree with Appellants that the examiner has not made out a *prima facie* case of obviousness with respect to claims 6, 7 and 11. We therefore reverse the rejection under 35 U.S.C. §103 with respect to claims 6, 7 and 11.

The amendments to independent claims 1, 23 and 25 incorporate the subject matter of the claim 7 limitation, and therefore overcome the rejection because neither Benson or Kleffe, alone or in combination, teach or suggest discovering a plurality of patterns common

to a plurality of the sequences, wherein each pattern comprises a plurality of positions, at least one of the positions comprise an expected symbol and at least one of the positions comprise one symbol of a specified plurality of symbols, wherein the specified plurality of symbols consists of at least two symbols and no more than  $|\Sigma| - 1$  symbols, wherein  $|\Sigma|$  is a  
 5 number of available symbols in a set.

#### Section 112 Rejection

10 The Board affirmed the rejection under §112, second paragraph, with respect to claim 4 but designated that affirmance a new ground of rejection. On page 6 of the Decision on Appeal, the Board asserted that

15 claim 4 is indefinite because of its requirement that “the step of discovering is performed without using any knowledge of the properties or features of sequences in the set of unaligned sequences.” The specification provides no definition of “properties” or “features” that would limit the type of information referred to in claim 4

Applicants respectfully assert that the amendment to claim 4 overcomes the rejection.  
 20 Support for the amendment can be found, for example, on page 6, lines 24-27, as well as on page 7, lines 15-20, of the specification. Applicants respectfully submit that, as a result of the amendment, claim 4 is now neither indefinite nor inconsistent with claim 1, as stated by the Board in the rejection (see Decision on Appeal, page 7).

#### Other Issues

On page 22 of the Decision of Appeal, the Board stated that

30 [t]he evidence of the record includes Rigoutsos [Rigoutsos et al., “Combinatorial pattern discovery in biological sequences: the TEIRESIAS algorithm.”], which appears to be prior art with respect to the instant claims. The patterns all include “don’t care” positions and positions where a particular amino acid is expected

Applicants respectfully assert that the amendment to claims 1, 6, 23, and 25 preclude the application of Rigoutsos as prior art with respect to the instant claims. As noted by the

Board above, Rigoutsos discloses patterns that include “don’t care” positions and positions where a particular amino acid is expected, but Rigoutsos does not teach or suggest a pattern including at least one of the positions comprise one symbol of a specified plurality of symbols, wherein the specified plurality of symbols consists of at least two symbols and no  
5 more than  $|\Sigma|-1$  symbols, wherein  $|\Sigma|$  is a number of available symbols in a set.

All of the pending claims, i.e., claims 1-3, 10, 12, 23 and 25, are in condition for allowance and such favorable action is earnestly solicited

If any outstanding issues remain, or if the Examiner has any further suggestions for  
10 expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner’s attention to this matter is appreciated.

Respectfully submitted,



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